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ABSTRACT

This literature review on special education finance is based on computerized bibliographic searches, nominations from leading special educators, and citation searches. It is organized into four sections covering the following topics: (1) costs, (2) funding sources, (3) funding formulas for special education programs and services, and (4) fiscal implications of major trends in special education. Included under the topic of costs are the purpose for cost analysis, methodologies and models used, and cost estimate studies. The second topic, funding sources, includes descriptions of federal, state, and local allocations for special education programs and services. The third section summarizes funding formulas for special education, their associated incentives and disincentives, and criteria for evaluating various types of funding formulas. The final section focuses on the fiscal implications of emerging trends such as inclusion, the integration of special education and regular education, and coordination among federal and state categorical programs. (Contains 59 references.) (DB)

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CSEF

Center for Special Education Finance

Narrative Review of the Literature

October 1993

Authors:

Ixtlac E. Dueñas, CSEF
Fran O'Reilly, Westat
Thomas B. Parrish, CSEF

AMERICAN INSTITUTES FOR RESEARCH
1791 Arastradero Road, P.O. Box 1113, Palo Alto, CA 94302 • 415/493-3550

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Introduction

Since the enactment in 1975 of P.L. 94-142, the Individuals with Disabilities Education Act (IDEA), the cost of special education services has grown substantially in both absolute and relative terms. As a result, issues such as the actual cost of special education services, the relationship of special education financing to regular education funding, and the relationship between funding policy and programmatic practice have become increasingly important to local, state and federal policymakers. In 1993, the U.S Department of Education's Office of Special Education Programs (OSEP) initiated funding for a national Center for Special Education Finance (CSEF), which currently resides at the American Institutes for Research (AIR) in Palo Alto, California. Through a five-year cooperative agreement, CSEF will have the opportunity to examine issues relating to special education costs and funding policy over time. An important initial step in embarking on this research agenda is a review of the literature pertaining to special education finance. This narrative review is the third of three components in this overall effort. The first two activities resulted in an extensive listing of articles arranged topically in the form of a traditional bibliography and an annotated bibliography; these are described further in the next section.

The Individuals with Disabilities Education Act was a landmark piece of federal legislation that opened the doors of public education to all children with disabilities, requiring states to provide a free, appropriate public education to all eligible students.

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Compliance with P.L. 94-142 raised policy issues concerning the choice of an appropriate state finance system that would successfully allow local education agencies to provide special education programs and services to all children with disabilities. States retain the primary responsibility for providing special education programs and services, and consequently for ensuring the provision of adequate special education funding to local education agencies.

For the 1990-91 school year, more than 4.8 million children with disabilities were served nationally at an average excess cost per pupil of $4,313 (U.S. Department of Education, 1992; NASDSE, 1993). Other data sources on the cost of special education consistently show the total cost of special education instructional programs and related services for children with disabilities to be almost twice as much as the total cost of services for children in regular education.

For the 1987-88 school year, of the total expenditures for special education and related services, 7.9 percent was funded by the federal government, 55.3 percent by states, and 36.7 percent by local education agencies (U. S. Department of Education, 1992). Although P.L. 94-142 implied that the federal government would eventually assume up to 40 percent of the excess cost of special education programs, the federal funding share has never risen above about 8 percent. The vast majority of the burden for financing special education programs and services is therefore borne by state and local education agencies (Anthony, 1991; Gough, 1992). With the increasing prominence of special education in the overall education enterprise, policymakers at the federal, state, and local levels increasingly require financial and fiscal policy information to inform their decisions about the funding and provision of special education services to children with disabilities.

In order to provide useful information to assist in the decisionmaking process for financing special education, CSEF has compiled a comprehensive literature review. It includes relevant articles, reports, and documents pertaining to special education costs, revenue sources, funding mechanisms, and non-monetary variables affecting special education. References were primarily obtained through three sources:

(1) computerized ERIC searches, (2) nominations from experts and advisors in the field of special education, and (3) searches through references cited in related articles and reports.

Overview of the Review of Literature

The literature review is divided into three components. The first component is a comprehensive topical bibliography for a broad range of issues related to special education finance. The topical bibliography is arranged into the following 14 areas:

Special Education Finance Topics

- Cost Analysis Methodologies
- Special Education Cost Studies
- Funding Formulas and Incentives/Disincentives in Special Education
- Funding Sources/Revenues for Special Education
- Equity Issues in Special Education

Topics Related to Special Education Finance

- Educational and Reform Policy in Special Education
- Eligibility and Labeling of Youth with Disabilities
- Delivery Systems and Placement
- Assessment, Outcomes, and Accountability in Special Education
- Special Education Instructional, Related, and Social Services
- Special Education Due Process and Legislation
- Special Education Collaboration with Other Federal Categorical Programs
- Relationship Between Special and Regular Education
- Regular Education Finance

The second component of the literature review is an annotated bibliography that provides a brief description of each article or report. Both the topical and annotated bibliographies will continue to be expanded and refined throughout the life of CSEF. The most recent

versions of the topical and annotated bibliographies are available in the *Topical and Annotated Bibliography: A User's Guide*.

This document, the third component, represents the narrative literature review. It is organized into four sections covering the following major topics; (1) costs, (2) funding sources, (3) funding formulas for special education programs and services, and (4) fiscal implications of major trends in special education. Included under the topic of costs are the purpose for cost analysis and the methodologies and models used to perform them. Also presented is an overview of studies that have estimated the costs for special education, including some of the problems associated with obtaining cost estimates. The second topic, funding sources for special education, includes descriptions of federal, state, and local allocations for special education programs and services. The third section summarizes funding formulas for special education, their associated incentives and disincentives, and criteria for evaluating the various types of funding formulas. Within the context of increasing numbers of students with special needs and the rising costs of serving them, the fourth and final section focuses on the fiscal implications of emerging trends such as inclusion, the integration of special education and regular education and coordination among federal and state categorical programs.

Conclusion

As described above, all three components of this effort to maintain an extensive review of the literature in special education are still under development. We will continue to review scholarly and professional journals, which may contain articles pertaining to special education finance. Our goal is eventually to establish and maintain the most expansive and definitive listing and review of the special education finance literature in the nation. This type of information base will be vital to the completion of the Center's research agenda, and will serve as a resource for scholars and policymakers interested in topics related to special education finance. To assist us in meeting this objective, we

welcome any comments regarding the interpretation of items included in this review or references to additional articles and reports that should be added.

Costs

Why are analyses of the costs of special education programs and services important? From a policy perspective, estimates of special education costs reflect a variety of choices and constraints made by state and local policymakers. An analysis of costs also provides policymakers with important data in order to compare educational programs and assess the cost trade-offs for implementing different program policies. According to Levin (1983), "[b]oth costs and effects must be considered to make good decisions in education...." Costs are largely dependent on the type of program arrangements used and the local price of goods and services. Therefore, cost estimates provide useful information to assist policymakers in decisions regarding allocations of funds; the choice of a funding formula; the degree of fiscal equalization among school districts; the monitoring of expenditure levels; the design, planning, and evaluation of educational programs; and the reduction of fiscal incentives for inappropriate classification and programs for children with disabilities (Kakalik, 1977; Moore, Holland, and Walker, 1982).

Under the heading of special education costs, five general areas are addressed. First, after making a distinction between education costs and expenditures, the different ways in which cost and expenditure data are presented in the literature are outlined. The alternative approaches most commonly used to obtain cost estimates for special education are described next, including alternative cost estimates yielded from national, state, and local studies. Finally, recent efforts to evaluate the effectiveness of special education services in relationship to cost are examined. This section concludes with a summary of potential problems associated with special education costs.

Definition of Costs and Expenditures

Although no universal definition exists for the term "costs," the term generally refers to the value of benefits foregone when resources are used one way rather than another (Kakalik, 1977; Levin, 1983). When we consider special education costs, we can refer to (1) the value of benefits foregone for other educational programs (e.g., general education) when resources are used for special education programs and services, and (2) the value of benefits foregone for certain types of special education resources when they are used one way rather than another. Moore, et. al., (1982) makes two cost distinctions in special education. There is the cost of special education that refers to total resources used to provide special education programs, and there is also the excess cost of special education, which refers to the additional costs incurred in serving a child with disabilities as compared to the cost of serving a child receiving regular education services.

It is important to distinguish between special education costs and expenditures. Although these two terms are sometimes used interchangeably, especially in a comparative analysis, their implications can be quite different. Some analyses may only be concerned with total expenditures for special education services. What does a single district, a state, or the nation spend for special education? The amount spent at any level of governance, however, will reflect a combination of factors, some of which will reflect cost differences and some which will not. The amount a district spends on special education will reflect the intensity of the service needs of the special populations enrolled, the costs in purchasing the resources needed to provide these services, and the level of intensity of the services provided. Intensity of student need and the resource costs are factors that are largely beyond district control, while the levels of services designed to meet those needs are more a matter of discretion. Thus, districts with identical costs may have substantially different levels of expenditure. For example, two districts of similar size, in the same labor market, enrolling students with virtually identical needs for special education services, may spend very different amounts for those

services, even though the cost factors they face are the same. If one of these two districts spends more, it is because of the differing levels of service they provide.

For a more complete discussion of the differences between cost and expenditure analyses see Chambers and Parrish (forthcoming). For the purpose of this discussion, however, it is important to recognize that some of the studies listed in this section focus on costs and others, on expenditures. Measures of expenditure are sufficient if the goal is simply to know what is being spent. However, for making cost comparisons across districts, those factors that affect spending and are within the scope of district choice must be held constant.

Cost and expenditure studies express their estimates in a variety of forms. For example, they usually present average costs or expenditures per special education student in terms of total costs, excess costs, or added costs; or they express the cost of special education in terms of cost ratios or factors. The most commonly used ways to present cost data are as follows:

- **Cost per pupil (average per pupil expenditure).** Osher, George, and Gonzalez (1991) describe the calculation of this cost as "the sum of the costs for all education-related instruction, administration, and transportation divided by the average daily attendance of the educational unit incurring the costs." Capital expenses are not included. The term "average per pupil expenditure" is commonly used to refer to the statistic called the "current expenditure per pupil in average daily attendance" collected annually by the National Center for Education Statistics (NCES). When a single estimate of this type is obtained, cost variations associated with individual types of students or educational needs will not be apparent.

- **Total costs.** Total cost figures include all of the costs of general education, special education, and related services that students with special needs receive. According to Osher, George, and Gonzalez (1991), "...the real or 'total cost' of educating a

student with a disability should be the sum of the expenditures for the time spent receiving special education in general education classes, special schools, special classes, or resource rooms; plus, the time spent in general education classes; plus, a portion of the administration of general education activities in which the student participates; plus, the cost of related services and specialized instructional equipment provided for that student."

- **Excess or added costs of special education.** This refers to the additional costs incurred from educating a child in special education, which are above and beyond the cost of educating a child in general education.

- **Cost ratios or factors.** In this form, special education costs are expressed as a ratio of the cost of educating special education students compared to the cost of educating general education students. The general education costs, which serve as the denominator, exclude other special programs (Chambers and Hartman, 1983; Chaikind, Danielson, and Brauen, 1993).

- **Resource costs.** This type of cost is derived through the identification of the resource ingredients needed to provide individual services. By associating cost-adjusted prices with each of these resource ingredients, cost estimates can be derived for individual programs and services that reflect the unique set of cost factors faced by individual districts. Thus, resource cost estimates are derived from the structure of the program or the delivery system.

Cost Models

Cost analysis is beneficial to policymakers because it allows them to compare special education programs and to consider the trade-offs in costs. Expenditure and resource cost are the two approaches to cost

analysis most often cited in the literature. Moore, et. al., (1982) defines the models as financial expenditure and resource utilization.

Most national, state, and local studies have utilized one of these two approaches to project special education costs. The remainder of this section provides a brief description of these approaches; and also provides a summary of selected national, state, and local cost studies utilizing these cost models.

■ Expenditure Model

This model utilizes district budgets to analyze and determine expenditures for each type of special education and regular education program, including indirect costs. Total expenditures are divided by the number of children with disabilities served by each program to obtain per pupil estimates. To compare the costs of different programs, average district expenditures are obtained for special and regular education to establish ratios or an index of the education costs (Raphael, Singer, and Walker, 1985; Moore, et. al., 1982).

Although district budgets are easily accessible for conducting a cost analysis using the expenditure model, this reliance on district budgets is responsible for three common limitations to this model, which are noted in the literature. First, district budgets often do not specify expenditures by program (Raphael, et. al., 1985; Moore, et. al., 1982). Second, inter- and intradistrict data are incompatible due to differences in the collection and reporting of special education fiscal data (Raphael, et. al., 1985; Moore, et. al., 1982). Third, capital expenditures are generally reported in the year of purchase rather than being amortized over the life of the item.

Additional limitations noted by Levin (1983) include the following: (1) resources that have already been paid for or that are included in another agency's budget will not be counted; (2) standard budget practices (e.g., for pricing certain resources) may distort the true costs of an ingredient; (3) the costs of any particular intervention are often embedded in a budget that covers a much larger unit of operation; and

(4) most budgetary documents represent plans for how resources will be allocated, rather than a classification of expenditures after they have taken place.

The first major study to use the expenditure approach, the National Education Finance Project (NEFP), was conducted in the 1970s. The NEFP collected and analyzed expenditure data from 24 selected school districts in five states with 'exemplary' special education programs for the 1968-1969 school year. According to Chaikind, et. al., (1993), the NEFP study provided median program costs for selected groups in special education and regular education. The NEFP derived cost ratios of special education costs (by disability grouping) to regular education costs per child.

Results of the NEFP study showed that special education costs, although varying widely among districts, on average were about twice as high as regular education costs. A great deal of variation in expenditures across districts for similar groups of students with disabilities was also noted. These variations in expenditure resulted from varying programming arrangements, pupil/staff ratios, demographic characteristics, and the newness of the programs.

Several limitations to the NEFP study are cited in the literature (Kakalik, 1977; Moore, et. al., 1982). One limitation occurs as a result of using a cost index that is a ratio of the average cost for a child with a specific disability divided by the average cost for a child across all disabilities. The results of the study were inconclusive because the comparative analysis across school districts did not include a cost index of special education relative to regular education. Also, a different type of cost index which measures the actual resources devoted to a child with disabilities in terms of standardized prices of resources, was not used. Kakalik (1977) notes that the first type of index is a relative measure of the resources devoted to regular education, while the second type of index is an absolute measure of the total resources devoted to special education independent of price variations across districts. Other limitations of the NEFP study include its small sample size and use of old data that are

indicative only of past expenditures (since a policy-oriented cost model was not used).

In a 1977 article, Marriner describes a study that derived detailed cost information on specific educational programs for students with disabilities in urban New York school districts. Through the use of the expenditure model (replication of NEFP data), the study found the total cost per pupil with disabilities to range from $4,243 for a pupil who is educably mentally retarded in full-time classes, to $14,000 for a pupil in the Center for Multiply Handicapped. The total average cost per pupil with disabilities was $5,897, compared to an average of $2,294 per nondisabled pupil.

■ Resource Cost Model

The resource cost model is based on Levin's (1983) concept of ingredients, which depicts each intervention (e.g., an educational program) in terms of the resources or ingredients that are required to produce it. As described by several authors (Raphael, et. al., 1985; Moore, et. al., 1982; Levin, 1983; Chambers and Hartman, 1983), the resource cost model requires that district data be collected on the direct and indirect inputs that comprise each type of educational program and service provided to different groups of children. Resource price data are also obtained for each of the inputs (e.g., personnel salary data, price data on equipment, facilities, costs). Once the service inputs and their costs are obtained, program expenditures are derived by summing the resource prices of the ingredients included in the program. Per pupil costs are derived by dividing these total program costs by the number of students in each program.

The resource cost model uses a common methodology, which builds costs from the resource ingredients of individual programs. These resource cost estimates can therefore be compared across programs (e.g., special versus regular education) by type of program within special education (e.g., resource room versus integrated class services), and across political jurisdictions (e.g., across districts and across states.) This model corrects for many of the shortcomings of the expenditure model.

As described by Lewis, Bruininks, and Thurlow (1989), it can serve as a valuable tool for planning programs, evaluating services, and considering alternative actions to increase the efficiency, appropriateness, and effectiveness of services. Its major limitation is that it can be somewhat costly to use because of its heavy reliance on detailed listings of program ingredients. Descriptions of frequently cited cost studies that use a resource cost model follow.

In 1981, the Rand Corporation conducted a study known as *The Cost of Special Education*. The primary purpose of the study was to provide information on the costs of various types of special education and related services for children with disabilities. Issues of concern were (1) what are the costs by age, type of disability, and type of educational placement; (2) what are the costs for assessment and placement, instructional services, related services, and administrative services; and (4) what are the added costs of special education above the cost of regular education. To address these issues, the Rand Corporation collected data from a nationally representative sample of school districts of various sizes for the 1977-78 school year in order to obtain a stratified probabilistic sample of 46 school districts in 14 states. The data were analyzed using a resource cost approach to determine the total costs for each service provided to youth with disabilities, and to measure the cost per child by age level, disability, and educational placement.

Results of the Rand study showed that the cost per pupil for educating a child in special education was slightly more than two times the cost per pupil for educating a child in general education. Similar to the NEFP study, the Rand study showed a 2.17:1 cost ratio. The total cost of education per child with disabilities was estimated at $3,577 for the 1977-1978 school year (Kakalik, Furry, Thomas, and Carney, 1981). The added, or excess, cost of providing special education services was estimated at $1,972 per child. In 1980-1981 dollars, the total costs and added costs for special education were estimated at $4,898 and $2,638 per child, respectively. While reviewing the Rand study, Chaikind, et. al., (1993) estimated that in 1989-1990 constant dollars, the total costs and added costs for a special education child would be $7,090 and $3,820,

respectively. The Rand study also found great variation in the costs and cost factors when based on age, disability and education placement.

According to Singer and Raphael (1988), the Rand study has limitations. Since the unit of analysis is a typical child, conclusions cannot be drawn about the variability of expenditures across children or the relationship between per pupil expenditures and individual characteristics such as functional status or background.

Hartman (1983) used the resource cost model to estimate the cost of special education to the nation if IDEA were to be fully implemented. He developed the Special Education Planning Model (SEPM), which utilized the model to derive national cost projections for current and future costs of educating all school-aged children with disabilities. Data used for the national projections were obtained from 28 states that had previously used the SEPM to develop their own projections. Other needed data (e.g., K-12 enrollment projections, salary and benefit data for school personnel) were from other sources. Specific costs were derived for school-aged children with disabilities by type of disability, by type of instructional program, and for related services.

That study estimated that for the 1980-1981 school year, the cost of special education programs and services to all school-aged children would be $9 billion, with a range of probable costs being $7.2 billion to $12.4 billion. Moore, et. al., (1982) indicates that Hartman's cost estimate of $9 billion was conservative since the Rand study found that $10 billion were spent on special education for the 1980-1981 school year. There was a great deal of variance in the cost estimates due to the differing assumptions underlying the model concerning the number of students with disabilities served, the placement patterns of students in instructional programs, the student/teacher ratio, the use of related services, and the price levels for resources.

Hartman (1983) notes several limitations associated with the SEPM. First, it does not establish student and program measures that accurately reflect national averages. The calculated cost estimates also are limited by the underlying assumptions for each of the SEPM variables. Other

limitations include the following: the cost projections are less reliable for related services since there are no extensive databases; the cost projections only focus on school-aged children; the cost projections are not actual costs, but only estimates for educating all children with disabilities in the appropriate manner; and finally, the cost projections are only specifically identifiable special education costs, and do not reflect the total costs of educating children with disabilities.

In 1988, a national resource cost study of special education was conducted by the Decision Resources Corporation (DRC). This study derived national estimates on costs and services for a stratified sample of 60 school districts in 18 states. For this sample, the DRC study collected detailed information on the resources, prices, and enrollments of all special and general education programs and services during the 1985-1986 school year. Furthermore, the DRC study examined variability in costs based on age level, disability category, and type of service delivery system.

Similar to prior research findings, the DRC study showed that educating a child with disabilities is a little more than twice the cost of educating a child in general education. The DRC study obtained a 2.3:1 cost ratio for the total cost of educating a child in special education compared to a child in general education. In 1985-1986, the total cost for educating a child in special education was estimated at $6,335 while the total cost for educating a child in regular education was estimated to be $2,780. According to Chaikind, et. al., (1993), the total cost in 1989-90 dollars would be equivalent to $7,400 assuming no real growth. The special education portion of students' educational expense, on average, amounted to $3,649 per pupil. The average added costs or excess costs for special education was estimated at $3,555.

Some of the noted limitations of the DRC study are that researchers made subjective decisions when confronted with uncomparable data from districts on enrollment by disability category, on the inclusion of non-categorical programs, and on the different terminology applied to special education children with speech and language impairments. In addition, DRC was only able to account for tuition costs, not resource

costs, for children enrolled or receiving services from private and other state and local agencies (e.g. state-operated special schools). Despite these limitations, Osher, George, and Gonzalez (1991) note that the DRC study appears to yield the most accurate cost estimates and ratios. Moreover, the cost ratios can easily be utilized by school districts, since the ratios are provided by program types similar to a school district's pattern of student placement.

Shields, Jay, Parrish, and Padilla (1989) conducted a study for the state of California on alternative district- and school-level programs and strategies for serving students with learning problems. The study examined both the effectiveness and the related costs of alternative strategies for integrating and improving educational services to students with learning problems. The study examined the effectiveness and related costs of alternative prereferral strategies, assessment procedures, and direct instructional approaches. Data were collected for a sample of 55 schools in 20 California districts during the Spring of 1988. Cost estimates were obtained for student study teams, assessment, and instructional services.

The authors found that student study teams, although costly ($252 per referral) reduced the number of routine and inappropriate referrals, improved the appropriateness of services received by students, improved school communication and coordination, and provided support to regular teachers working with students with learning problems.

In relation to direct instructional services, the study found that the instructional cost per pupil in a resource program was $1,517. For formal assessment activities, $523 was spent per year per student in resource specialist programs. Assessment activities accounted for more than one-fifth of the total cost of providing the resource program, which raised the issue of cost in relation to the benefits of the assessment procedures.

A study conducted in 1988 by Singer and Raphael examined how expenditures varied according to the mix of students and their educational needs; different practices with respect to identification, placement, and levels of services provided; and differing resource prices. Data were

collected for a stratified random sample of 571 special education students in three metropolitan areas for the 1982-83 school year. Data were collected using microdata on educational and related services received by each student and were derived from district budgets. This study also utilized data obtained in the Rand study (Kakalik, et. al., 1981).

Consistent with previous research, Singer and Raphael found that the total per pupil expenditure for special education was $7,577, twice that for regular education. They also found considerable variations in instructional and related services across children in the same primary disability and placement group. Even though expenditures for related services differed by disability, variations also occurred among children within the same disability category. A notable finding of this study is that the least restrictive environments were the least expensive. For example, expenditures per pupil equaled $3,847 for a regular class, $5,229 for a regular class with pull-out, and $8,659 for a special class in a regular school.

■ Economic Models for Determining Cost Effectiveness

Cost-effective methodologies for evaluating educational programs are available and described in the economics literature. Levin (1975, 1981, and 1983), Alkin (1970), and Benson (1978) identified two appropriate methodologies to determine economic efficiency - cost-effectiveness analysis and benefit-cost analysis. Cost-effectiveness analysis utilizes experimental design, a research design which limits the ability to measure the effects of different interventions on students with severe disabilities. Benefit-cost procedures do not require the use of experimental design structure. This methodology also uses inputs and outputs with a common metric.

Cost-benefit analysis is a methodology used to measure the cost and effectiveness of program alternatives. Levin (1975, 1981, 1983) reported how the analysis is used to evaluate and predict the cost of inputs for competing projects and measure the value of the resulting outputs or

outcomes. It is obviously of great importance in time of scarce resources to ensure that those resources are used efficiently.

Although recent attention has focused on examining the costs of special education, little research has been conducted linking those costs with student outcomes. Hasazi, Gordon, and Roe (1985) conducted a study of 462 special education graduates from nine school districts in Vermont on the relationship of employment and past placement in special education. They reported that students whose last placement was in a resource room had significantly higher rates of employment than students who were placed in self-contained special education classrooms.

A series of case studies (VanDevanter et al., 1981; Brown et al., 1983, 1986) were developed, which documented the impact of segregated and integrated service delivery models on the vocational opportunities of severely disabled graduates from the Madison, Wisconsin, Metropolitan School District. The case studies showed substantial increases in the number of integrated graduates moving into non-sheltered environments. However, no statistical analysis was conducted to determine the level of significant change within or between segregated or integrated service delivery models. It is generally agreed that "integrated services and the utilization of its essential features optimize the social, vocational and independent living potential of severely disabled students" (Piuma, 1990, pp. 18-19).

A more recent study conducted by Piuma (1990) is based on the Madison, Wisconsin, case studies. In order to elaborate on the previous work, Piuma designed a benefit-cost analysis study. The investigator collected financial data such as the cost of schooling, costs attributed to adult vocational services, and the financial value of these postschool programs to the recipient, taxpayer, and society. The purpose of this benefit-cost study was to examine the economic efficiency of public investments made to segregated and integrated service delivery models. School inputs were identified as resources spent to educate the graduates in segregated or integrated service delivery programs. Outputs were identified as postschool participation in community-based employment, facility-based employment, or day center employment. The cost of adult

vocational programs, wages earned, taxes paid, and reduction in SSI payments were used to measure the economic benefits of the investment. Findings reported from this study include

> ...a substantially higher return on integrated investments as compared to return for segregated programs...
> taxpayer and society returns on investments to segregated and integrated programs are relatively equal...
> In the long term, returns substantially favor the integrated program, particularly from society's perspective...
> ...investments in integrated programs result[ing] in lower adult service costs, higher productivity, and higher earnings...
> ...investments in segregated programs produce higher adult service costs, lower productivity, and lower earnings (Piuma, 1990, p.ii).

Lewis, et. al. (1992) conducted a study to compare the program costs and outcomes in providing special education services to individuals with moderate to severe mental disabilities under three administrative structures in Minnesota. The administrative structures included a large independent school district, an intermediate school district, and a joint powers special education cooperative. Major findings include the following:

- Program effectiveness across the three administrative structures varied by 10 percent as determined by a group of stakeholders. Among the three administrative structures, independent of costs, the intermediate district's program was found to be most effective, with the independent urban district's program the least effective.

- Costs do not appear to be strongly influenced by the type of administrative structure for most program areas, but are influenced by other factors (e.g., number of students being served, community setting, characteristics of students being served, student-teacher ratio, teacher salaries).

- For programs serving students with moderate to severe disabilities, the study indicates material differences in the cost efficiency among the three administrative structures. The intermediate school district and the joint powers special education cooperative were about twice as cost-effective as the urban independent school

district. Average measures of effectiveness were generally higher while the average costs were generally lower for the intermediate school district and the joint powers special education cooperative.

A note of caution is required for these findings. The considerations include the differing needs and functions served by the administrative structures, the number of students needed to justify the administrative structures, and varying teacher salaries, which comprise the greatest single expense to a school district in the provision of instructional programs.

The present knowledge base relating special education services to outcomes is limited. Further research is needed to examine the relationship between the costs of special education and outcomes, particularly outcomes that evaluate the acquisition of skills necessary to be competitive in postsecondary education, training, and employment.

Conclusion

Lewis, et. al., (1989) noted that due to increasing costs in special education, issues of accountability, cost containment, and program efficiency have increasingly become concerns to policymakers. Policymakers and administrators need reliable and complete cost information for planning and assessing their educational programs and services. Across a variety of methodologies, sample sizes, and years, the cost of educating a special education student has consistently shown to be more than twice the cost of educating a regular education student. The studies were varied in the level of detail and the type of breakouts for program costs, with the DRC study providing the most current and extensive cost data.

All of these studies, however, have limitations for policy purposes. First, due to incompatibility of accounting and reporting formats, accurate cost data by program are time consuming, costly, and burdensome to collect. Second, by the time the data are reported, they tend to be out of

date. Last, cost data in the absence of some form of outcome information are of limited utility for evaluation, policymaking, and planning purposes.

Funding Sources

Revenues for special education programs and related services are obtained from three primary sources - federal, state, and local agencies. Estimates of funding allocations show that federal sources contributed 7.9 percent, state sources 55.3 percent, and local sources 36.7 percent of special education revenues during the 1987-1988 school year (U.S. Department of Education, 1992; NASDSE, 1993). These estimates indicate that the vast majority of the burden for financing special education is borne by state and local education agencies (Anthony, 1991; Gough, 1992).

This chapter provides a general overview of the different sources of revenues, the governmental agencies and programs responsible for providing revenues for special education programs and services, and the different types of revenues that are provided by each agency. The following chapter describes the funding mechanisms, or formulas, used to distribute these revenues.

Sources of Revenues

Revenues for special education programs and services, as described by Crowner (1985), are classified by five types: federal, state, local, intermediate, and private sources.

- Federal agencies provide revenues for special education. Federal revenues are either indirectly or directly received by

school districts. School districts indirectly receive federal revenues through state agencies and intermediate units. Through incentive and model grants, school districts receive revenues directly from federal agencies.

- State agencies provide revenues for special education expenditures through direct transfers of special education revenues to school districts and other agencies through the state funding formula.

- Intermediate sources are revenue-generating agencies operating at the regional level, which provide funds to local school districts. Examples of intermediate agencies include Special Education Local Planning Areas (SELPA), and Board of Cooperative Educational Services (BOCES).

- Local sources are school districts and county offices of education, which generate funds through local level taxing schemes.

- Private sources include health insurance companies and the parents of children with disabilities (Moore, et. al., 1982).

According to Hartman and Haber (1981) "...the educational expenditures for special education are supported from categorical revenues from higher governmental levels, by local funds generated from the district's fiscal capacity, and possibly by state general aid funds."

These sources for special education revenues either directly or indirectly provide funds to special education service providers. Service providers may receive funds indirectly from the source or through another designated agency. If funds are provided to the service provider via another agency, then these funds will be affected by administrative and overhead costs, which consequently reduce the amount available for special education programs and services. Few of the mentioned agencies have an obligation to totally fund the care of a child with disabilities. Consequently, some have contended that when these agencies share the fiscal responsibility, special education falls prey to bureaucratic fragmentation, duplication of programs and services, and neglect from agencies (Moore, et. al., 1982).

The revenues for special education are usually distributed through agencies at each governmental level. Each of these agencies have programs designed to provide a portion of their revenues towards special education programs and services for children with disabilities. The rest of this section describes the types of funds that are distributed by federal, state and local sources; the governmental agencies and roles they play in the provision of funds; and governmental programs designed to provide funds for the provision of special education programs and services.

■ Federal Sources

The primary vehicle for the federal funding of special education programs, P.L. 94-142, states that the federal government will bear up to 40 percent of the average per pupil expenditures in order to support the cost of special education programs and services. However, the federal government has not lived up to this stated share of special education support. Gough (1992) noted that the federal government has never fulfilled its commitment to state and local education agencies for the funding of special education programs and services. Gough (1992) and Moore, et. al., (1982) noted that federal aid has never exceeded 12 percent of the average per pupil expenditures. Current data show that the federal government provides 7.9 percent of total special education costs.

The *Fourteenth Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act* (1992) reports that for fiscal year 1991, $1.9 billion federal dollars were distributed to states. Federal allocations for IDEA Part B equaled $407 per child, and allocations for Chapter 1 of ESEA equaled $561 per child. Federal funding distributed for special education was estimated at $1.9 billion for fiscal year 1992 and $2 billion for the 1993 fiscal year (OSEP Leadership Conference Handout, 1993). Based on estimated child counts of 4,717,0 00 for 1992 and 4,858,000 for 1993, the average federal share per child for IDEA Part B was $419 in 1992 and $423 in 1993. The federal share per child under Chapter 1 of ESEA was $523 in 1992 and $432 in 1993.

For the 1994 fiscal year, the President is requesting to maintain the federal share of about four percent for total per pupil costs for children with disabilities, and a seven percent federal share for the average excess cost of educating children with disabilities. If the number of children served is estimated to increase by 98,000 additional children over the 1993 child counts, then the federal allocation per child would approximate $437 for IDEA Part B and $389 for Chapter 1 ESEA (OSEP Leadership Conference Handout, 1993).

According to Kakalik (1977), P.L. 94-142 deals with funding requirements by making two assumptions: (1) incidence rates for children with disabilities do not exceed 12 percent, and (2) the funds required per child with disabilities served per year averages at least 40 percent more than average annual per pupil expenditures. Based on these two assumptions, the federal government is authorized through P.L. 94-142 to contribute 40 percent of the national average per pupil expenditure to assist state and local agencies in supporting special education services. P.L. 94-142 funds provide for the basic support of services and the regulation of special education programs.

Hartman and Haber (1981) indicate that the federal finance system provides separate revenues specifically earmarked for special education. Therefore, the federal government also provides categorical funding in addition to P.L. 94-142 authorized funding. There are five types of federal agencies that allocate funds to states and local school districts. The federal agencies are education, health, welfare, vocational rehabilitation, and mental health and retardation (Kakalik, Brewer, Dougharty, Fleischauer, and Genensky, 1973). Within these federal agencies there are programs designed to provide a portion of the revenues for special education programs and services. Kakalik, et. al., (1973), Moore, et. al., (1982), and Hartman (1992) identified the following federal programs: Medicaid Early and Periodic Screening, Diagnosis, and Treatment; Social Security, Title V, Maternal and Child Health and Crippled Children's Services; Social Security, Title XVI, Supplementary Security Income, Disabled Children's Program, and Aid to Families with Dependent Children; Vocational Rehabilitation; Aid to Educationally Disadvantaged Children, Chapter 1; P.L. 89-313, state Supported Schools for

Handicapped Children; Headstart; CETA; Vocational Education; and Developmental Disabilities. According to Kakalik, et. al., (1973), special education agency programs alone accounted for over half of the expenditures, followed by mental health and retardation and welfare agencies programs.

■ State Sources

P.L. 94-142 requires states "...to match the portion of discretionary funds (up to 20% of the total allocation) reserved specifically for state use in providing special education services" (Moore, et. al., 1982). In addition, P.L. 94-142 contains provisions (i.e., nonsupplant and excess cost requirements) for local school districts, which place indirect pressures on states and prevent them from reducing state support for special education. Consequently, a major source for special education funding is the states. More than half of the special education programs and services are funded by state aid. Gold, Smith, Lawton, and Hyary (1992) reported that the proportion of total state aid dedicated to special education ranged from 2.5 percent in Kentucky to 16 percent in Vermont. Of the 40 states providing this information, 20 exceeded 10 percent.

State finance systems are usually designed to provide separate revenues that are limited to special education programs and services. Separate state funds are set aside for special education in order to meet the needs of special populations, and most importantly to equalize district disparities in providing special education programs and services. State aid for special education can be distributed through general education funds, categorical funds, noncategorical funds, or a combination of these types of funds.

Local education agencies receive special education funds from states through the state's general education finance formula. Chambers and Parrish (1982b) refer to this type of funding as "student need based adjustments." States incorporate cost adjustments in their basic finance formula to account for certain special need characteristics. Moore, et. al., (1982) explain that states that support only the excess costs of special

education usually include disabled pupils in any basic foundation support they make available to school districts. These adjustments recognize the additional costs needed to educate disabled students, as well as other special student populations.

Moore, et. al., (1982) describe categorical funding as "...aid that is allocated for and limited to a specific set of activities and/or students." In this case, states provide separate categorical funding for the instruction of special education students. Aside from providing categorical funding for instructional programs, states may also choose to provide categorical funding for related services such as transportation and special programs for children with severe disabilities. The advantages to categorical funding include the ability to efficiently target funds for special education, and to ensure that the funds are used appropriately. The disadvantage of categorical funding is that it removes from local governments the ability to control financial allocations for locally established programs.

Since categorical aid can be disequalizing in terms of taxpayer equity, states may then decide to combine categorical funding with funding from their basic finance formula in order to obtain fiscal equalization (O'Reilly, 1989). Furthermore, there may be states that distribute general and special education funds in one sum, but earmark or restrict the amount of revenue to be used specifically for special education. In this case, the state does not technically have categorical funding; but by restricting part of the money for special education programs and services, they are achieving the same effect as categorical aid (Hartman and Haber, 1981; Moore, et. al., 1982).

A NASDSE report on *State Special Education Finance Systems* shows that 27 states distributed categorical funds for special education services, 21 used the same equalization formulas used for general education programs, and two states combined special education categorical aid with another categorical program (O'Reilly, 1989).

The primary state agency providing financial support for special education is the state department of education. However, funds are also contributed by other state agencies such as the Department of Public

Welfare, the Department of Mental Health and Mental Retardation, the Department of Health Services, the Department of Human Resources, the Department of Children and Family Services, and the Department of Labor. To track the amount of funds each of these agencies contributes is difficult since "...sums allocated or expended specifically for special education frequently are not so reported. Consequently, little is known about the magnitude of financial assistance derived from these sources" (Moore, et. al., 1982).

■ Local Sources

In many states, school districts are primarily financed through property taxes levied at the local level (Hartman and Haber, 1981). The fiscal capacity of a school district is usually taken to be its property tax base. The fiscal capacity of the school district may influence the variety and quality of educational programs and services that children with disabilities receive. Because local school districts often obtain their funds for instructional programs and services from property taxes, there is often no means of identifying the amount allocated to special education programs. Moore, et. al., (1982) note that because the amount of local revenue allocated to special education is unknown in many states, it is virtually impossible to accurately report local support levels.

Conclusion

Mandates are expanding faster than state and federal revenue sources for special education. In states where state statutes mandate a higher level of services than federal law, legislatures are beginning to examine the possibility of amending state law to conform with federal legislation (Anthony, 1991). Controlling the cost of special education appears to be an issue of increasing importance across the states. This is leading many states to rethink their special education funding formulas.

Funding Formulas

A state's special education funding formula is a mechanism for transferring state categorical aid for special education programs and related services to local school districts. The funding formula can also be used to distribute funds to other agencies providing special education programs, such as intermediate education agencies. As mentioned by O'Reilly (1989), variations on a state's formula or separate mechanisms can also be used "to distribute funds for students served in out-of-district placements, such as state-operated facilities or private schools. Some states also have additional funding provisions to address specific situations, such as residential care, special education transportation, 'catastrophic costs,' and extended school year services."

State special education funds are provided "either in addition to, or instead of resources distributed through the general aid funding program" (Verstegen, 1990). States may include special education as a factor in their general aid formula in order to equalize the effects of differences among school districts as a result of the composition of their special student populations. Chambers and Parrish (1982) describe the inclusion of special education in the general aid formula as a cost adjustment that is made for certain special need characteristics of the students enrolled in a particular district.

This section focuses on the funding formulas used by states to distribute special education aid to local school districts. The different types of funding formulas discussed in the literature are described, criteria suggested for evaluating funding formulas are presented, and the

incentives and disincentives associated with each of the funding formulas as described in the literature are reviewed.

Types of Funding Formulas

Each state develops a mechanism for distributing special education funds in accordance with the state's goals, priorities, and policies regarding special education. Moore, et. al., (1982) note that "[S]tate policy makers choose a funding formula based on their own decision making needs, the provision of appropriate educational placements for children with disabilities, the equitable treatment of districts based on their individual needs, and the administrative efficiency and cost control." Although each state's special education funding formula is unique, state formulas can be grouped according to common characteristics. The literature mentions at least six general types of special education funding formulas: (1) unit, (2) personnel, (3) weighted, (4) straight sum or flat grant, (5) percentage, and (6) excess cost (Thomas, 1973; Kakalik, 1977; Hartman, 1980; Chambers and Parrish, 1982b; Moore, et. al., 1982; Crowner, 1985; O'Reilly, 1989; Verstegen, 1990).

The *unit* formula distributes a fixed amount of money from the state to the school district for each qualified unit of classroom instruction, administration, and transportation. Funds are provided for the cost of the resources needed to operate the unit. The amount of money provided may vary by type of unit.

A *personnel* formula distributes state aid to cover all or a portion of the salaries for special education personnel. This is a special case of a unit formula that generally does not include any of the other special education costs (e.g., supplies, transportation) incurred by local school districts.

A *weighted* formula distributes state aid for each child with disabilities based on the per pupil allocation for regular education multiplied by a factor or weight, which typically varies by type of disability or program. Thus, the formula distributes different amounts of money based on each

child's disability and/or special education program. Usually, some basis for estimating previous costs incurred by school districts for general and special education determines the actual numerical amounts of the weights (Chambers and Parrish, 1982b).

Straight sum or *flat grant* formulas distribute a fixed amount of state aid to local school districts for each child with a disability who receives special education. This type of formula is used by the federal government to distribute funds to states under the Individuals with Disabilities Education Act (IDEA), for the provision of special education and related services to students with disabilities aged 3-21. A variation on the traditional flat grant approach has recently been adopted by the states of Vermont, Pennsylvania, and Montana. Assuming standardized levels of overall incidence, these states base their flat grants on the *total* number of students enrolled in a district, rather than on counts of the number of students who receive special education.

A *percentage reimbursement* formula distributes state aid for a partial or full percentage of the approved costs incurred by local school districts for the provision of special education services. Approved costs refer to costs which fall into designated categories or ceilings that states have identified as allowable.

An *excess cost* formula distributes state aid based on the total per pupil cost of educating a child in special education minus the total per pupil cost of educating a child in general education. The additional cost, or the difference, incurred by the local school district for educating a special education student is either fully or partially reimbursed by the state.

As research on state special education funding has emerged, a number of modifications to the six basic types of funding formulas have been suggested. For instance, Hartman (1980) proposed that the definition for excess cost be reexamined. He preferred excess cost formulas to "...be defined in terms of programs and services provided by school districts, rather than an expenditure difference between the cost per student of special and regular education." In a more recent Hartman (1992) article, he identified two distinct concepts of excess cost - the traditional concept

mentioned above, and a new concept he proposed as the 'supplemental and replacement excess cost.' A funding formula using this new concept of excess cost accounts only for the supplemental costs incurred by a student with disabilities for special education services that are received in addition to general education services.

Another type of funding formula proposed by Hartman (1991), Chambers and Hartman (1983), and Chambers and Parrish (1982a, 1984) is the Resource Cost Model. When using this approach, program standards are established for the various special education programs and services. Program standards are comprised of a listing of all programs and services in special education, the resources that comprise each program, the prices for each of these resources, and parameters on the number of students to be served by each program unit. A resource cost model distributes full or partial state aid based on the simulated cost of services in each district based on the program standards.

As discussed in the following section, the basic types of funding formulas can be further separated into more basic components, such as the funding element on which the formula is based.

Components of Special Education Funding Formulas

Three types of funding elements have been defined in the literature - resources, students, and costs that can be manipulated in order to allocate state special education aid. The types of funding formulas discussed above can be classified according to these basic funding elements. Usually one of the elements forms the basis of the funding formula, while the other two elements are utilized to regulate the amount and uses of the funds generated under the formula (Hartman, 1980). Kakalik (1977) and Hartman (1980) provide the following definitions for the three identified funding elements:

- Resources - Formulas are based on the payment for resources (e.g., teachers, aides, equipment) with regulations on the costs

of resources that are allowable and on the resources used per student with disabilities served. Funding formulas that are grouped as resource-based include unit and personnel formulas.

- Students - Formulas are based on the actual, or estimates, of the number and type of children with disabilities served, with regulations on the cost and use of resources. Weighted and straight sum or flat grant are considered to be student-based formulas.

- Costs - These formulas are based on district expenditures for special education programs and services and generally contain regulations on the number of students who can be served and the use of resources. Funding formulas that are cost-based include the percentage reimbursement and excess cost formulas. Hartman's supplemental and replacement excess cost formula is also considered to be cost-based.

Although Kakalik's and Hartman's identified elements are the most commonly used classification scheme in the current literature, there have been elaborations on the basic theme. Moore, et. al., (1982), for example, classify funding formulas "on two dimensions - the main factor upon which the [state] allocation is based (i.e., resources, students, or costs) and the mechanism used to allocate [state] funds (i.e., flat grant, percentage, or weights)" (O'Reilly, 1989). According to Crowner (1985), state education aid can also be allocated based on services or units. These two additional elements are described as follows:

- Services - Formulas are based on actual type of services provided (e.g., resource room, self-contained classroom).

- Units - Formulas are based on the combination of two or more of the following elements: resource, student, cost, and services.

Criteria for Evaluating Special Education Funding Formulas

Because state categorical aid for special education obligates and generates aid for local school districts, the funding mechanism typically contains numerous constraints, regulations, and exceptions concerning the flow and use of state aid. According to Hartman (1992), funding formulas can serve as a preventative measure against programming abuses for fiscal gain, and as a method for controlling costs. Funding formulas can also affect the number and type of children with disabilities served, the type of programs and services provided by local school districts, the duration of time students spend in special education programs, the placement of student in various programs, and class size and caseloads (O'Reilly, 1989). Obviously, local education programming decisions will not only be influenced by a selected formula but also by its associated constraints and regulations.

The amount of state aid received by each local school district, however, could essentially be the same under any formula once the state decides on the programming, cost determination, and level of funding (Bernstein, Kirst, Hartman, and Marshall, 1976). Since each type of funding formula can be manipulated to provide the same funding allocations to school districts, how should state policymakers choose a formula to best fits their needs? This section summarizes criteria for evaluating special education funding formulas that have been presented in the literature. These criteria allow policymakers to evaluate how a funding formula may aid or prevent the effective implementation of special education goals and policies set forth by a state.

Criteria for the evaluation of special education funding formulas have been enumerated by several authors, and there is a great deal of similarity among them. For example, Bernstein, et. al., (1976) identified equity; comprehensiveness; flexibility; accountability; cost-effectiveness; compatibility; simplicity; and concordance with current state policies, as criteria on which to evaluate a funding formula. Kakalik (1977) suggested

the following criteria: the adequacy of funding in relation to need in terms of both quantity and quality of services; equity of funds distribution; anticipated effects of service delivery in terms of quality of life and in terms of future economic benefits; comprehensiveness of types of services and programming arrangements in relation to need; control and coordination of services; compatibility with general education finance and service delivery; control and coordination of services; and efficiency.

Moore, et. al., (1982), expanded Bernstein et. al.'s (1976) list to provide the following 12 criteria: compatibility with other state funding policies and practices; rationality and simplicity; ease of modification, minimized misclassification; reinforcement of least restrictive placement policies; avoidance of stigmatizing labels; accommodation of varying student needs across districts; accommodation of cost variations; adjustments for fiscal capacity; funding predictability; containment of special education costs; and minimized reports, recordkeeping, and state administration. Hartman (1991) modified that list to include equity; program orientation; comprehensiveness; simplicity; stability; shared fiscal responsibility; understandability; cost-effectiveness; and efficiency. In a more recent article, Hartman (1992) identified yet another modified list of criteria which includes equity; educational programming; rationality and simplicity; comprehensiveness; flexibility and responsiveness; stability; accountability and cost-effectiveness; efficiency; and adequacy of funding.

Based on what has been enumerated in the literature, 10 criteria for the evaluation of a special education funding formula are summarized below: (Bernstein, et. al., 1976; Kakalik, 1977; Moore, et. al., 1982; Hartman, 1991; Hartman, 1992)

- **Equity.** An equitable funding formula should accommodate for different student needs among different, and within similar, disability categories. It should also account for variation in the needs of local school districts (e.g., varying concentrations of children with disabilities among districts and varying cost differences among districts due to price variations and economies-of-scale.) Equitable formulas should not allow access to special education programs and the quality of these

programs to be dependent on the wealth and location of a district. Obtaining equivalent program and resource levels for all districts in a state should be the aim of an equitable formula.

- **Compatibility with other state funding policies and practices.** The funding formula should not differ significantly from existing state approaches. In this manner, educational programs can be interrelated to obtain a comprehensive view of education aid.

- **Rationality and simplicity.** A funding formula should avoid needless complexity so that it can be understandable to school administrators, state department of education officials, and legislators. A funding formula should also utilize procedures and data which are easily operationalized and maintained.

- **Comprehensiveness.** A funding formula should accommodate the full range of educational programs and services for all disabled students.

- **Educational programming.** A funding formula should encourage the provision of appropriate educational programming and practices which are based on the needs of the students. A funding formula should avoid labeling students, should minimize the misclassification and overclassification of students, and should reinforce the placement of students in the least restrictive environment.

- **Predictability and stability.** A funding formula should also yield predictable revenues to support local school district programs. The ability to predict appropriate levels of resources promotes effective planning and stability at both the state and local level.

- **Adequate and adjustable funding levels.** In nearly all states, a substantial proportion of special education programs is funded by local education agencies. The formula should provide districts with sufficient state funding in order to provide appropriate special education programs for students with disabilities. In addition, the formula should adjust state funding to account for differences among districts in their ability to support special education.

- **Flexibility and responsiveness.** A funding formula should be flexible in order to deal with unique local conditions and changes that affect programs. In addition, formulas should be able to self-adjust or be easily adjusted to accommodate such changes as the rate of inflation or additional cost information.

- **Efficiency.** Funding formulas should require only a minimum amount of data, recordkeeping, and reporting that are necessary for prudent program and fiscal management at the state and local level.

- **Accountability, cost-effectiveness, and cost control.** An appropriate cost accounting system should be associated with the funding formula in order to track special education funding provided to local education agencies. Funding formulas should encourage local education agencies to provide programs of the highest quality in cost-effective ways. In addition, funding formulas should contain cost ceilings or place a partial burden on local education agencies to control excessive or inappropriate costs for special education.

According to O'Reilly (1989) a single funding formula cannot accommodate all of these criteria; tradeoffs are required. Therefore, state policymakers must determine which of these criteria are most important to their state. Then they must articulate the goals of their state funding program and develop appropriate policies that will meet these goals. As state policymakers continually review their goals and policies for special

education, they will also need to reevaluate their funding formula on the basis of these measures.

Incentives and Disincentives Associated with Special Education Funding Formulas

Since funding systems involve the transfer of substantial amounts of fiscal resources between state and local agencies, Hartman (1992) suggests that there are numerous incentives and disincentives created for local agencies in the provision of services to students with disabilities. State policymakers need to consider such incentives and disincentives in order to minimize the negative effect they may have on local program practice and to maximize the likelihood that desired state policies will be effectively implemented at the local level. Kakalik (1977) maintains that most of the incentives and disincentives are not inherent in the funding formula, but can be resolved by the appropriate design of the formula in addition to its associated constraints and regulations. The following section outlines the incentives and disincentives associated with the basic formula types, as identified in the literature. Note, however, that little empirical evidence exists to determine the actual impact of these theoretical suggestions.

■ Resource-Based Formulas

These formulas include personnel and unit-based funding, as well as the resource cost model. The strongest incentive identified for unit-based formulas is that districts may try to maximize the number of high-cost reimbursable units. On the other hand, a unit formula can encourage local school districts to maximize class sizes in order to decrease the cost per student. Moreover, if the formula provides full reimbursement of the per pupil costs, then it may encourage local school districts to minimize class sizes. When the formula is based on class size or a student's disability, inappropriate placement of students in programs with lower per pupil expenditures may occur. Since funds distributed through a

resource-based formula are not typically prorated, students with disabilities can be unserved if the number of units needed exceeds the number allowed. Small school districts may not be able to qualify for ancillary service and administration units. In addition, differences across districts in the cost per unit may not be reflected in the formula because all special education programs (regardless of cost or quality) generally receive the same amount of funding under this type of formula. In addition, this type of formula may be less likely to provide funding specifically for mainstreaming or full inclusion programs (Moore, et. al., 1982, O'Reilly, 1989, Hartman, 1992).

The weighted teacher, classroom unit formulas, and percentage of personnel salaries described by Moore, et. al., (1982) are not based on child counts and therefore may be less likely to encourage overclassification or misclassification. This formula does tend to encourage maximizing class size, but as a result is usually accompanied by state regulations on maximum class size and personnel/student ratios. This type of formula is straightforward and is generally considered to be simple to use. It is an efficient formula due to fairly simple recordkeeping and verification, and is usually compatible with other state general education funding provisions. For small school districts and low incidence programs, this formula can be problematic since it may be difficult for them to generate a sufficient number of students to constitute a fundable unit. This can encourage serving some students in regular classrooms, but it may also result in inadequate or inappropriate programming. This formula does not provide funds based on the actual district cost of programs and services.

The personnel-based formulas tend to encourage a greater use of special education personnel over the use of such nonpersonnel resources as supplies and transportation services and other types of programs which can be delivered by regular education personnel. This type of formula may allow personnel providing mainstreaming programs to be counted for funding purposes. Since a personnel-based formula does not require the labeling of children with disabilities, incentives for overclassification or misclassification tend to be minimized. However, this formula may encourage the retention of children with disabilities in special education

because maximum class sizes will decrease the cost per pupil. If local education agencies receive full funding for special education personnel, then a minimum class size is encouraged.

The resource cost models that have been proposed (Chambers and Hartman, 1983; Chambers and Parrish, 1982a and 1984) attempt to simulate actual program costs by district. This approach has been specifically designed to tie funding closely to the cost of service provision, thereby removing incentives to over- or underclassify students. However, the relative complexity of the resource-cost approach renders it hard to understand at the local level and difficult to administer at the state level.

■ Student-Based Formulas

The types of formulas included here are pupil weighting formulas and the straight sum or flat grant per student. Funding formulas based on pupil weights tend to be useful in allowing state and local policymakers to make accurate fiscal projections. However, because they generally do not include cost differentials based on average per pupil cost to each district, they tend to prove inequitable to districts with higher costs. In addition, pupil weights should be viewed as multipliers of average per pupil expenditures to the extent that they are based on expenditure, rather than cost, data. This formula does require student classification, but some of the negative effects of labeling may be slightly ameliorated by weighting pupil placement rather than disability categories.

A weighted formula based on categories of disabilities assumes that there is no variance in the needs of children within the same disability grouping. This type of formula may also encourage districts to identify children with higher weights and to serve children in categories and programs with lower costs. Some districts may even choose not to serve some types of children in an appropriate program because the state funds received are substantially less than the actual cost. A longitudinal study conducted by Dempsey and Fuchs (1993) in Tennessee showed that when funding shifted from a flat to a weighted formula, a statistically significant decrease in less restrictive placements and an increase in more restrictive

placements occurred. As a response, Florida has adopted weights for funding children in mainstreamed programs; other states are also considering this type of approach (Kentucky and Louisiana).

Another type of student-based formula is a straight sum or flat grant approach. This type of approach may encourage districts to serve more children in order to receive more funding, resulting in overclassification of students. Some states have attempted to neutralize this incentive by basing funding on total, rather than special education enrollment (Vermont, Pennsylvania, and Montana). Regardless of the funding base, this type of approach may encourage districts to assign children to lower cost placements and to maximize class size. However, if differential reimbursements are provided for disability, personnel, or programs, then the formula encourages districts to serve students in placements with higher reimbursement. Moore, et. al., (1982) note that this formula is simple to administer. It does not typically account for differential district needs, unless additional provisions are provided for variance in fiscal capacity so that local district funding is adequate.

■ Cost-Based Formulas

Cost-based formulas include the percentage reimbursement and excess cost models, as well as the supplemental replacement cost formula. Incentives associated with a percentage reimbursement formula often depend on the relative shares of state and local funding. If districts are required to fund a larger percentage of the costs then there will be an incentive to identify fewer students as eligible, maximize class sizes to decrease cost per pupil, place children in the least expensive program, and transfer children from higher to lower cost placements. The larger the percentage of special education costs borne by the state, the more likely that the incentives will be reversed. Therefore, if states are providing a high percentage of the costs of special education services, constraints can accompany the formula to help control against excessive state costs and overidentification.

The incentives created from an excess cost or supplemental replacement cost formula are also largely dependent on the shares of funds received from state and local sources. Other problems associated with this formula include defining what constitutes excess, or allowable, costs. states can control their share of funds by delineating allowable costs or using cost ceilings. This formula can also fund the costs of mainstreaming, provided there is a methodology for determining such costs. This type of formula can be favorable for district planning but may have large administrative and reporting burdens. O'Reilly (1989) notes that cost-based formulas are also effective for addressing student and cost variations among districts.

Conclusion

It is evident that state special education funding formulas do more than transfer categorical aid to local school districts. Incentives and disincentives related to specific types of funding formulas may result in over- or underclassification of students, high or low cost programming, and more or less restrictive placements.

State regulations and constraints can be attached to funding formulas to assist in identifying and implementing state policy at the local level. For example, currently, many state policymakers are searching for ways to encourage more inclusionary practice through their funding provisions, or at the very least to ensure that the formula is neutral with regard to student placement decisions. This trend is providing new challenges to traditional funding approaches. Although the literature is equivocal on the actual effects of various incentives and disincentives associated with specific types of funding formulas, state policymakers must be aware of the potential impact that all aspects of their finance systems may have on the delivery of special education programs and services.

Major Trends in Special Education: Fiscal Implications

Introduction

The 1975 enactment of P.L. 94-142, the Education for All Handicapped Children Act, (currently the Individuals with Disabilities Education Act or IDEA) dramatically changed the educational opportunities available to children with disabilities. The special education system as it currently operates was largely determined by this landmark federal legislation. Since that time, the number and percentage of children receiving special education services has continued to grow. In 1991-92, nearly 5 million children, aged birth through 21, received special education and related services. This represents approximately 7.3 percent of all children in the resident population who were receiving special education services, up from 5.1 percent in 1976-77 (U.S. Department of Education, 1993).

Throughout the last two decades, the number of children with disabilities receiving special education services has consistently increased. There is every indication that the special education population will continue to grow during the 1990s as states implement more recent components of IDEA targeted to programs for infants, toddlers, and preschoolers with disabilities, and as new categories of eligible children continue to be added to the federal mandate. In addition, the literature is replete with examples of increases in the at-risk population due to spiraling numbers of children living in poverty; advances in medical technology; and increased exposure of children to drug abuse, venereal

diseases, the AIDS virus, and poor neonatal care (Chaikind and Corman, 1991).

The cost of providing special education has grown along with the numbers of students (Anthony, 1991). The greatest financial burden of meeting the federal special education mandates falls to the states and local school districts, which on average support over 90% of the cost of these services; in about 20% of the states, local districts provide over half the financing for special education services (O'Reilly, 1993). Increasing fiscal pressures on state and local education budgets, coupled with a national call for improved student outcomes have lead states to question the effectiveness of current special education practices and to examine new service delivery systems. A nationwide movement towards regular education environments that more fully include students with disabilities is one model that has emerged. The implementation of such models portends widespread change to our current system of special education. Not only will the delivery of services be modified, but there are far-reaching implications to such areas as the organization of state and district administration, pre-service and in-service training for both special and regular education personnel, and procedural compliance with current state and federal mandates.

State policymakers must be aware of current trends in special education and their likely impact on special education resources. For example, widespread interest in measuring student performance could require substantial commitment of fiscal and personnel resources to develop an equitable system that can accommodate all students with disabilities. The following sections provide an overview of several major trends in special education that will likely impact the distribution of education resources. These trends involve changes in the population of children with disabilities and the delivery of special education services, including integration of special and regular education programs; and coordination among federal and state categorical programs.

Changes in the Population of Children with Disabilities

The Fifteenth Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act (U.S. Department of Education, 1993) reports that during the 1991-92 school year, 4,994,169 children and youth (birth through age 21) with disabilities were served under the IDEA, Part B, and Chapter 1 of ESEA (SOP) programs. This represents a 3.9 percent increase from the previous year, and the largest increase since the first year of implementation of the program in 1976-77 (U.S. Department of Education, 1993). This increase is due to a variety of factors, including (1) the addition of new disability categories; (2) increasing numbers of young children being identified as a result of the Preschool Grants Programs and the Infants and Toddlers with Disabilities Program; (3) increasing numbers of young children with learning and behavioral difficulties exposed to alcohol and/or drugs in utero; and (4) increasing referrals, by regular education teachers, of "difficult to teach" children for assessment and placement in special education (U.S. Department of Education, 1992).

Hales and Carlson (1992) predict that "children with severe disabilities needing special education services will more than double due to an increase in social problems, drug exposure, AIDS infections, and medical and technological advances" (p.iii). This prediction is supported by Chaikind and Corman (1991), who found that children who weigh less than 2,500 grams at birth are almost fifty percent more likely to be enrolled in some type of special education program than children who were of normal birthweight. They estimate that since 1989-1990 there was an incremental cost in special education of $370.8 million per year due to low birthweight. In addition, they reported that the increased number of low birthweight babies in recent years coincides with an increase in the number of women receiving late or no prenatal care. Chaikind and Corman suggest that early prenatal care to reduce the incidence of low birthweight will yield significant cost savings to the educational infrastructure.

Recent changes to federal policy have also impacted the numbers of children being served under IDEA by expanding the mandate to target new populations of students. With enactment of P.L. 99-457, the Education of the Handicapped Act Amendments of 1986, Congress created a program for infants and toddlers with disabilities and their families. Grants to states support coordination across agencies and disciplines to ensure the provision of comprehensive early intervention services for children below the age of 3. P.L. 99-457 also made changes to the preschool grants programs (Section 619 of IDEA), which currently requires states to provide a free appropriate public education to all eligible 3-through 5-year old children with disabilities. The 1990 Amendments to IDEA (P.L. 101-476) broadened the mandate yet again, by adding two new disability categories for federal eligibility purposes--autism and traumatic brain injury; a third category, attention deficit disorder (ADD), was considered, but has not yet been added. It is not clear that the addition of autism and traumatic brain injury have significantly added to the population of students being served, as many students with these disabilities met eligibility criteria for other categories, most notably other health impaired. The addition of ADD as a category would likely result in a substantial increase in the number of students being served. In most states, children with ADD do not currently meet state or federal eligibility criteria.

The number of children identified as eligible for special education significantly impacts a state's fiscal requirements for special education. One way states can impact special education resources therefore, is through their eligibility requirements. As Moore, Walker, and Holland (1982) point out, defining eligibility requirements for children with disabilities allows states to (1) determine who qualifies for services and (2) establish categories of children to serve as a basis for distribution of funds. Thus, eligibility requirements can both set boundaries for the receipt of services and for directing resources to intended beneficiaries. Many other factors influence the number of students with disabilities served by states and local districts. Moore, et. al., (1982) report that the number of children with disabilities found in any state is a product of several factors that extend beyond definitions, eligibility criteria, and

incidence rates. These factors include local interpretations, fiscal resources, and traditions of services.

For Weintraub and Higgins (1982), local variables which influence the number and types of children with disabilities, and thus the cost of special education programs and services, include population size, density, increasing/decreasing enrollment, eligibility criteria, interagency shifts, and magnet effect. Weintraub and Higgins (1982) state, "(t)he number of children requiring similar special education and related services will influence the per capita cost of delivering such services" (p. 23).

The number of children identified as eligible for special education also has an effect on the resources available for the remainder of the education system. In recent times of declining state and local fiscal resources, an increasing number of students eligible for special education may mean a decrease in the resources available to other populations, either in the state as a whole or in the education system in general. Huelskamp (1993) notes that during the past 15 years, spending for elementary and secondary education increased about 30 percent per pupil in constant dollars. In disaggregating the available data, little of the increase appears to have gone to regular education. Rather, much of the increase went to special education and to fixed costs such as insurance and retirement funds.

Special Education Delivery System

The type and intensity of services provided to students with disabilities, as well as by whom and how the services are delivered, have a direct effect on the cost of special education. Weintraub and Higgins (1982) describe the special education service delivery system as including those elements necessary to maintain and deliver the needed services to children with disabilities. These elements include instructional programs and related services, and the personnel and/or public or private agencies that provide the needed programs and services. Changes to any component of the system, such as an expansion in the type of services

provided, coordination of services between agencies, or changes in personnel or staffing requirements will affect the cost of special education.

The setting in which students receive special education also affects the cost of the services provided. In a study of the cost of special education using a resource cost approach, Moore, Strang, Schwartz and Braddock (1988) reported that per pupil costs of instructional programs ranged from $647 for resource programs for students with speech or language impairments to $20,416 for self-contained programs for deaf-blind children.

Hales and Carlson (1992) report that over the next 20 years, a drain on available resources will occur due to the expansion in the type, quantity and variety of related services provided to students with disabilities. This expansion will be accompanied by increased ambiguity among medical, related services, and instructional services, and critical shortages of special education personnel at all levels. They predict that paraprofessionals will have an increasingly more important role in service delivery and direct instruction, and that regular educators will assume a larger role in the provision of services to students with disabilities, particularly students with mild disabilities, as special education becomes a support to regular education programs and personnel. This is consistent with the current trend towards inclusion--schools and classrooms that more fully integrate students with disabilities into the regular education system.

The inclusion movement is requiring states and school districts to seriously reconsider the current operation and governance of the education system. Curriculum and instructional practices, teacher and principal roles, and allocation of resources are all elements of the system that will be affected by the creation of more inclusive educational settings. A small body of emerging research indicates that students served in more inclusive settings are achieving similar or better academic results than when they were in more restrictive settings (Anthony and Strathie, 1993; Affleck, 1988; Wang & Baker, 1985-86; Franklin & Sparkman, 1978). In contrast, Viadero (1993) notes that inclusion could lead to a reduction of services for the children who need help the most, and it may be seized by

school administrators and policymakers as a way to stretch scarce education dollars.

A recent study by the National Association of State Boards of Education (NASBE, 1992) to evaluate the position of special education within the current education reform movement resulted in a series of recommendations that call for organizing special and regular education into an inclusive system that strives to produce better outcomes for all students. In order to create an inclusive system, however, the authors note that state boards of education must (1) create a new vision of education that includes *all* students; (2) foster and encourage collaborative partnerships and joint training programs between general and special educators; and (3) sever the link between funding, placement, and disability labels. The NASBE study group reported that the current special education finance system perpetuates the separate educational system that currently exists and acts as a barrier to establishing an inclusive education system. Thus, NASBE recommends the use of a flat-funding formula in a state's finance system in order to discourage overidentification and the use of labels. Another recommendation is to make special education funding directly dependent on the per pupil funding levels for general education, and to focus special education funding on the local district.

In a report of special education within the context of school restructuring, McLaughlin and Warren (1992) support the notion that state special education funding formulas and local accounting practices have a negative effect on collaboration between special and regular educators. Specific concerns that may affect the degree of collaboration between regular and special education are the loss of teacher and associated resources due to assumptions made about placement ratios; personnel assignments within the school being restricted by source of salaries (e.g., IDEA, Part B); district budgets not allowing dollars to transfer from one program to another; and dollars for special education materials and equipment being allocated separately and therefore having their use restricted. McLaughlin and Warren present the options of either a centralized administration of programs and services for children with disabilities, or a school-based management approach to allow special

education to co-exist with regular education. Both options would give the necessary funding for special education to local schools, while simultaneously leaving the school with the primary responsibility of providing the necessary educational programs to all children.

Coordination among Categorical Programs

Along with increased coordination of regular and special education, another emerging trend is increased collaboration among other federal and state programs that serve various populations of students with special needs. A major motivation behind increased collaboration is the desire to use resources more efficiently and effectively by decreasing fragmentation and duplication of services. As noted by O'Reilly and Carlson (1993), the current climate of school restructuring provides the opportunity for the federal government to exercise leadership by assisting schools to improve instructional services through coordination and integration of programs. Such collaboration would enable various revenue sources to be used more effectively to provide instructional programs and services based on the individual needs of children. Another recommendation of the NASBE study group, mentioned earlier, is for policymakers to explore the possibility of combining various funding streams to support educational programs. The federal programs suggested for linkage include Medicaid, Chapter 1, Head Start, and the Social Services Block Grant (Title XX). The study group also noted that local providers had commented that integration of funding sources at the state level would enable local school districts to remain focused on service provision rather than billing procedures.

Hales and Carlson (1992) predict that over the next 20 years, federal and state regulations will be reworked in IDEA and Chapter 1 to allow for the blending of special education and Chapter 1 funding and instruction. In addition, they found that future policy changes would make health care universally available for families of young children with disabilities. The collaboration and integration of federal and state programs consistently mentioned in the literature are Medicaid, Chapter 1, State

Operated Programs for Students with Disabilities, and the Chapter 1 Basic Program.

■ Medicaid

According to the NASBE study group, states are exploring the linkage between the health and education systems through Medicaid-reimbursable services provided in schools. Under the Medicaid system, the federal government usually pays up to 50 percent of the costs of the program and has reimbursed some states for amounts up to 83 percent (NASBE, 1992). Related services provided to students with disabilities under IDEA can qualify for Medicaid reimbursement, which is one source of revenue that can be used to extend available resources for students with disabilities. A booklet on Medicaid coverage for children receiving special education (Lewin/ICF & Fox Health Policy Consultants, 1991) explains that a state Medicaid program can pay for those related services specified in the federal Medicaid statute and determined to be medically necessary by the state Medicaid agency. For children with disabilities enrolled in Medicaid, the program offers additional financing to educational agencies by allowing health-related services and providers to be billable. "Federally allowable services include not only traditional medical services and remedial care, such as physicians' services and prescription drugs, but also several health and therapeutic interventions, such as occupational therapy." (p. 5)

■ Chapter 1, State Operated Programs

One program funded under Chapter 1 of the Elementary and Secondary Education Act (ESEA) provides funds to states to educate children with disabilities in state operated or supported programs (SOPs). The Chapter 1 ESEA, SOP program was established prior to IDEA as an incentive to states to serve children with the most severe disabilities. Since that time, however, states have been encouraged to transfer children from SOPs into special education programs operated by local school districts, and issues abound related to the continued, separate

operation of the two programs. A recent report from the General Accounting Office (GAO, 1988) notes substantial overlap between the Chapter 1 SOP, and IDEA programs in both administration and provision of services. Recent proposals that have come forth under reauthorization proceedings for Chapter 1 suggest that the two programs may be merged. It is unclear at this time whether that will result in any immediate or future decline (or increase) in federal resources to states for provision of services to students with disabilities.

■ Chapter 1 Basic Program

A separate section of the Chapter 1, ESEA program provides federal funding for compensatory education services to students who are educationally disadvantaged. It has been suggested in a number of studies that there is substantial overlap between the target population served by the Chapter 1 basic program and children with high incidence disabilities (e.g., learning disabilities) served under IDEA. Moore and Steele (1988) examined similarities and differences between special education programs for children with mild disabilities and Chapter 1 programs for low achieving children. They found that (1) services for both programs co-exist in most elementary grades; (2) both programs use a pull-out model to provide more intensive assistance, usually in reading and math; (3) special education programs for children with mild disabilities serve a lower percentage of children within each school and grade than do Chapter 1 programs; (4) children with mild disabilities were somewhat lower achieving across subjects than Chapter 1 children as a group; and (5) instructional services provided to children with disabilities differed from Chapter 1 services in measures of the overall student/teacher ratios, instructional group size, and minutes of instruction per day.

The authors also reported that both programs were more likely to serve the same students sequentially, and as a result the number of dually-served students was fairly small. They also found little evidence that Chapter 1 programs alter the distribution or provision of special education services for children with mild disabilities. In an attempt to

maximize resources available to all students who are experiencing learning problems, many school districts are attempting to coordinate both the Chapter 1 and special education programs with their regular education curriculum. One emerging model for such coordination is serving students in the regular classroom (as opposed to the more typical pull-out program) with a team of consulting and/or collaborating teachers. The categorical funding streams of the programs, however, often make this relationship complex. For example, state fiscal policies may create barriers to the use of special education-funded teachers in classrooms dominated by students who are not receiving special education services.

The funding and coordination of these and other federal programs will continue to receive attention as school districts attempt to restructure their service delivery systems in order to maximize their resources while improving student outcomes.

Conclusion

Education policymakers at all levels (i.e., federal, state and local) will face numerous challenges during the 1990s as they attempt to meet the needs of a changing population of students with special and complex needs within a system of declining fiscal resources. Efforts to reform and restructure the delivery of services must be supported by appropriate changes to state and local resource allocation policies. This will require decisions about how students should be counted as eligible for services, the type and intensity of services to be provided, the training of personnel and allocation of staff resources, the coordination of current categorical programs to maximize resources, the measurement of student performance outcomes, and the cost-benefits of system changes. States must also consider the mix of state and local resources that will be required, the equity of various funding policies and the need to adjust state funding mechanisms and program requirements to meet the needs of a changing system.

References

Affleck, J. Q. (1988). Integrated classroom versus resource model: academic viability and effectiveness. *Exceptional Children, 54*(4), 339-48.

Akin, M. C. (1970). Evaluating the cost effectiveness of instructional programs. In M.C. Wittrock & D.E. Wiley (Eds.), *The evaluation of instruction: Issues and problems* (pp. 221-237). New York: Holt, Rinehart, and Winston, Inc.

Anthony, P. (1991). Financing special education in an era of fiscal restraint. *School Business Affairs, 57*(9), 16-20.

Anthony, P. & Strathie, J. (1993, March). *Integrating special education, bilingual, and Chapter 1 students into the regular classroom: a cost/benefit analysis.* (Paper presented at the annual conference of the American Education Finance Association, Albuquerque, New Mexico.)

Benson, C. (1978). *The economics of public education.* Boston, MA: Houghton Mifflin Company.

Bernstein, C. D., Kirst, M., Hartman, W. T., & Marshall, R. S. (1976). *Financing educational services for the handicapped: An analysis of current research and practices.* Reston, VA: The Council for Exceptional Children.

Brown, L., Shiraga, B., Ford, A., Nisbet, J., VanDevanter, P., Sweet, M., York, J., & Loomis, R. (1983). *Teaching severely handicapped students to*

perform meaningful work in nonsheltered vocational environments. Madison, WI: University of Wisconsin.

Brown, L., Rogan, P., Shiraga, B., Zanella Albright, K., Kessler, K., Bryson, F., VanDevanter, P., & Loomis, R. (1986). A vocational follow-up evaluation of the 1984-1986 Madison Metropolitan School District graduates with severe intellectual disabilities. In L. Brown, K. Zanella Albright, P. Rogan, J. York, B. Shiraga, A. Udvari Solner, & E. Long (Eds.), *Educational programs for students with severe intellectual disabilities: Vol.XVI* (pp. 1-119). Madison, WI: Madison Metropolitan School District.

Chaikind, S. & Corman, H. (1991). The impact of low birthweight on special education costs. *Journal of Health Economics, 10*, 291-311.

Chaikind, S., Danielson, L. C., & Brauen, M. L. (1993). What do we know about the costs of special education? A selected review. *The Journal of Special Education, 26*(4), 344-370.

Chambers, J. G., & Hartman, W. T. (1983). A resource-cost-based approach to the funding of educational programs: An application to special education. In J. G. Chambers & W. T. Hartman (Eds.), *Special education policies their history, implementation, and finance* (pp. 193-240). Philadelphia, PA: Temple University Press.

Chambers, J. G., & Parrish, T. B. (1984). *The development of a program cost model and a cost-of-education index for the state of Alaska* (Final Report, Volumes I-IV). Palo Alto, CA: Associates for Education Finance and Planning, Stanford University.

Chambers, J. G., & Parrish, T. B. (1982a). *The development of a resource cost model funding base for education finance in Illinois* (Volume I: Executive Summary; Vollume II: Technical Report). Palo Alto, CA: Associates for Education Finance and Planning, Stanford University.

Chambers, J. G., & Parrish, T. B. (1982b). *The issue of adequacy in the financing of public education: How much is enough?* (Project Report 82-A-

19). Palo Alto, CA: Institute for Research on Educational Finance and Governance.

Crowner, T. (1985). A taxonomy of special education finance. *Exceptional Children, 51*(6), 503-508.

Dempsey, S., & Fuchs, D. (1993). 'Flat' versus 'weighted' reimbursement formulas: A longitudinal analysis of statewide special education funding practices. *Exceptional Children, 59*(5), 433-443.

Franklin, G. S. & Sparkman, W. E. (1978). The cost effectiveness of two program delivery systems for exceptional children. *Journal of Education Finance, 3*, 305-314.

Gold, S. D., Smith, D. M., Lawton, S. B., & Hyary, A. C. (1992). *Public school finance programs of the United States and Canada 1990-1991.* Albany, NY: The Nelson A. Rockefeller Institute of Government, State University of New York and the American Education Finance Association.

Gough, P. B. (1992). Another bad rap (Editorial). *Phi Delta Kappan*, 3.

Hales, R. M., & Carlson, L. B. (1992). *Issues and trends in special education.* Lexington, KY: Federal Resource Center for Special Education, University of Kentucky

Hartman, W. T. (1992). State funding models for special education. *Remedial and Special Education, 13*(6), 47-58.

Hartman, W. T. (1991). Special education funding approaches and cost control. *School Business Affairs, 57*(5), 24-28.

Hartman, W. T. (1983). Projecting special education costs. In J. G. Chambers & W. T. Hartman (Eds.), *Special education policies their history, implementation, and finance* (pp. 241-288).

Hartman, W. T. (1980). Policy effects of special education funding formulas. *Journal of Education Finance, 6,* 135-159.

Hartman, W. T., & Haber, T. R. (1981). *School finance reform and special education* (Project Report No. 81-A8). Palo Alto, CA: Institute for Research on Educational Finance and Governance, Stanford University.

Hasazi, S., Gordon, L., & Roe, C. (1985). Factors associated with the employment status of handicapped youth exiting high school from 1979 to 1983. *Exceptional Children, 51,* 455-469.

Huelskamp, R.M. (1993). Perspectives on education in America. *Phi Delta Kappan, 74*(9), 718-721.

Kakalik, J. S. (1977). *Policy issues in the cost and financing of special education* (Report No. WN-9680-HEW). Santa Monica, CA: Rand Corporation.

Kakalik, J. S., Brewer, G. D., Dougharty, L. A., Fleischauer, P. D., & Genensky, S. M. (1973). *Services for handicapped youth: A program overview* (Report No. R-1220-HEW Abridged). Santa Monica, CA: Rand Corporation.

Kakalik, J. S., Furry, W. S., Thomas, M. A., & Carney, M. F. (1981). *The cost of special education: A Rand note* (Report No. N-1792-ED). Santa Monica, CA: Rand Corporation.

Levin, H. M. (1975). Cost-effectiveness in evaluation research. In M. Guttentag & E. Struening (Eds.), *Handbook of evaluation research,* Vol. 2. Beverly Hills, CA: Sage Publications.

Levin, H. M. (1981). Cost analysis. In N. Smith (Ed.), *New techniques for evaluation.* Beverly Hills, CA: Sage Publications.

Levin, H. M. (1983). *Cost-effectiveness: A primer.* Beverly Hills, CA: Sage Publications.

Lewin/ICF & Fox Health Policy Consultants (1991). *Medicaid coverage of health-related services for children receiving special education: an examination of federal policies*. Prepared for the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services.

Lewis, D. R., Bruininks, R. H., & Thurlow, M. (1989). Cost analysis for district-level special education planning, budgeting and administrating. *Journal of Education Finance, 14*(4), 466-483.

Lewis, D. R., Johnson, D. R., Erickson, R. N., & Bruininks, R. H. (1992). *Final report: Linking costs to multiattribute outcomes in special education*. Minneapolis, MN: University of Minnesota, Institute on Community Integration.

McLaughlin, M. J., & Warren, S. H. (1992). *Issues & options in restructuring schools and special education programs*. College Park: MD: Institute for the Study of Exceptional Children, University of Maryland.

Marriner, L. S. (1977). The cost of educating handicapped pupils in New York City. *Journal of Education Finance*, 3, 82-97.

Moore, M. T., Walker, L. J., & Holland, R. P. (1982). *Finetuning special education finance: A guide for state policymakers*. Princeton, NJ: Educational Testing Service, Education Policy Research Institute.

Moore, M. T., & Steele, D. (1988). *The relationship between Chapter 1 and special education services for mildly handicapped students*. (Draft)

Moore, M. T., Strang, E. W., Schwartz, M., & Braddock, M. (1988). *Patterns in special education service delivery and cost* (Contract No. 300-84-0257). Washington, DC: Decision Resources Corporation.

National Association of State Directors of Special Education. (1993). Summary of the 14th annual report to Congress on special education. *Liaison Bulletin, 19*(3), 1-12.

O'Reilly, F. (1993). *State Special Education Finance Systems, 1992-93.* Palo Alto, CA: Center for Special Education Finance, American Institutes for Research.

O'Reilly, F. (1989). *State special education finance systems, 1988-89.* Washington, DC: National Association of State Directors of Special Education.

Office of Special Education Programs. (1993). *Summary of the 1994 budget* (Handout). Washington, DC: OSEP Leadership Conference.

Osher, T., George, J., & Gonzalez, P. (1991). *A resource paper on the relative cost of special education* (Contract No. 300-87-0155). Alexandria, VA: National Association of State Directors of Special Education.

Piuma, M. F. (1990). *A benefit-cost analysis of integrated and segregated programs serving individuals with severe disabilities: A sourcebook of technical methods and procedures used in the economic analysis.* San Francisco, CA: San Francisco State University.

Raphael, E. S., Singer, J. D., & Walker, D. K. (1985). Per pupil expenditures on special education in three metropolitan school districts. *Journal of Education Finance, 11,* 69-88.

Shields, P. M., Jay, E. D., Parrish, T. B., & Padilla, C. (1989). *Alternative programs and strategies for serving students with learning disabilities and other learning problems (Final Report).* Menlo Park, CA: SRI International.

Singer, J. D., & Raphael, E. S. (1988). *Per pupil expenditures for special education: To whom are limited resources provided?* (Grant No. G))8630147). Cambridge, MA: Harvard University.

Thomas, M. A. (1973). Finance: Without which there is no special education. *Exceptional Children,* 39(6), 475-480.

U.S. Department of Education. (1993). *To assure the free appropriate public education of all children with disabilities: Fifteenth annual report to Congress on the Implementation of the Individuals with Disabilities Education Act.* Washington, DC: Office of Special Education Programs.

U. S. Department of Education. (1992). *To assure the free appropriate public education of all children with disabilities: Fourteenth annual report to Congress on the Implementation with Disabilities Education Act.* Washington, DC: Office of Special Education Programs.

U.S. General Accounting Office (1989). *Special education congressional action needed to improve Chapter 1 Handicapped program* (Report No. GAO/HRD-89-54). Washington, DC: Author.

VanDevanter, P., Yellnek, N., Brown, L. Schroeder, J., Loomis, R., & Gruenewald, L. (1981). A follow-up examination of severely handicapped graduates of the Madison Metropolitan School District from 1971-1978. In L. Brown, D. Baumgart, I. Pumpian, J. Nisbet, A. Ford, A. Donnellan, M. Sweet, R. Loomis, & J. Schroeder (Eds.), *Educational programs for severely handicapped students,* Vol. XI (pp. 1-177). Madison, WI: Madison Metropolitan School District.

Viadero, D. (April 4, 1993). "Special educators' group weighs in on 'full inclusion.'" *Education Week.*

Verstegen, D. A. (1990). *School finance at a glance.* Denver, CO: Education Commission of the States.

Wang, M. C., & Baker, E. T. (1985-86). Mainstreaming programs: design features and effects. *Journal of Special Education, 19*(4), 503-21.

Weintraub, F. J. & Higgins, S. (1982). *Planning state fiscal policies to meet local needs. Special education in America: Its legal and governmental foundations series.* Reston, VA: Council for Exceptional Children, ERIC Clearinghouse on Handicapped and Gifted Children.